

**REMARKS**

Claims 1-13 are pending in the present application. Claim 13 is herein amended.

**Claim Rejections – 35 U.S.C. §112**

Claim 13 was rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Applicants respectfully traverse this rejection.

Claim 13 is herein amended and is no longer indefinite. Support for newly amended claim 13 may be found within the as originally filed specification, for example on page 7, lines 4-5.

Favorable reconsideration is earnestly solicited.

**Claim Rejections – 35 U.S.C. §103**

Claims 1-7, 10 and 11 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Takegawa et al (Rapid Communication in Mass Spectrometry, 2004, IDS) (Takegawa). Applicants respectfully traverse this rejection.

Takegawa discloses the measurements of MS3 fragment pattern by fragmenting one of MS2 fragment ions, i.e., precursor MS2 ion, and identifies a sugar chain structure through comparing the measured MS3 fragment pattern with a plurality of reference MS3 fragment patterns for ions having the same mass to charge ratio as that of the precursor MS2 ion.

If, in this case, two or more of the reference MS3 fragment patterns are similar to each other and the measured MS3 fragment pattern is similar to one of these reference MS3 patterns, it is difficult to determine the exact matching and the precursor MS2 ion cannot be identified. Takegawa gives no answer to the problem.

In the presently claimed invention, before actually fragmenting MS2 fragment ions, the “mutual similarity index” is calculated among reference MS3 fragment patterns for ions having the same mass to charge ratio as one of the MS2 fragment ions. The “mutual similarity index” relates to reference MS3 fragment patterns. It is calculated before actually performing fragmentation to produce measured MS3 fragment patterns. The mutual similarity index is used to judge beforehand whether the MS3 fragment pattern matching and the subsequent ion identification would be successful. This preparatory process is repeated for each of the MS2 fragment ions until the most appropriate MS2 fragment ion is obtained for actually performing fragmentation and pattern matching, which facilitates and speeds up the sugar chain identification process.

Takegawa et al does not disclose, teach, suggest or provide any reason to use a method of choosing the most suitable MS2 fragment ion, which is an embodiment of the presently claimed invention. As such, Takegawa et al does not render the presently claimed invention obvious.

Favorable reconsideration is earnestly solicited.

Claims 8, 9, 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Takegawa in view of Armentrout (Topics of Current Chemistry, 2003). Applicants respectfully traverse this rejection.

Takegawa does not render the presently claimed invention obvious. The deficiencies of Takegawa are not overcome by the disclosure of Armentrout.

Thus, the combined reading of Takegawa in view of Armentrout fails to render the presently claimed invention obvious.

Favorable reconsideration is earnestly solicited.

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the rejections under 35 U.S.C. §112 and the rejection under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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